

Unit 8 – Climate Change (Ch.12)

Chapter 12.1 – Distance and Time

1. _____ is the space between two points and is commonly measured using _____ as the units.
2. The difference between _____ time and _____ time is called the time interval. The symbol used to represent time interval or change in time is the Greek letter _____ beside a lower case t, or _____.
3. Combining distance and time can help us determine the _____ of an object.
4. What do the terms “period” and “frequency” describe?
5. A woodpecker taps 8 times on a tree in 2 seconds. Determine the period and the frequency.
6. _____ is the angle or steepness of a line on a graph. In science, the _____-axis is very often time.
7. To calculate slope we divide the _____ by the _____.

Chapter 12.2 – Speed

1. We can calculate the speed of an object by dividing the change in _____ by the change in _____. The average speed on an object is the total _____ the object travelled divided by the total _____ taken.
2. A student is walking on a football field. When the student crosses the 20 m mark a stopwatch it started. When the student cross the 30 m mark, the stopwatch is stopped. It took 5 s for the student to walk that distance. Calculate the average speed of the spider in m/s.

3. A car travels 300 km in 2.5 h. Calculate the average speed of the car.

4. Calculate the average speed of the following objects:
 - a. An object moves 25 metres in 5 seconds

 - b. An object moves 10km in 2 hours

 - c. An object moves 5 metres in 20 seconds.

5. Calculate the time of the following scenarios:
 - a. An object travels 3 m/s. How long would it take the object to travel 15 m?

 - b. An object travels 6 km/h. How long would it take the object to travel 48 km?

 - c. An object travels east at 5 m/s. How long would it take the object to travel 22 m [E]?

6. Calculate the distance travelled of the following objects:
 - a. An object has an average speed of 6 m/s for 8 seconds

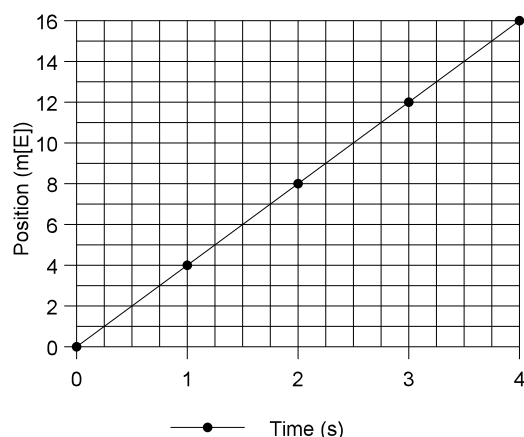
b. An object has an average speed of 55 km/h for 2.5 hours.

c. An object has an average speed of 0.5 m/s for 12 seconds.

7. The speed of an object at a particular instant in _____ is referred to as the object's _____ speed. If the speed of an object is constant, then its _____ speed will be the same as its instantaneous speed.

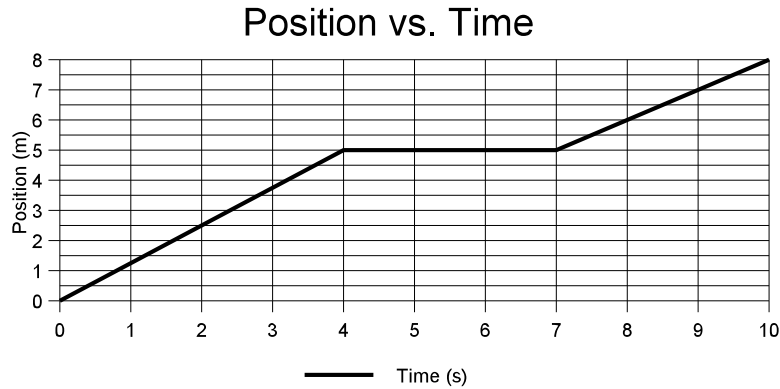
Chapter 12.3 – Graphing Distance and Time

- _____ graphs show how the distance of an object varies with time by the _____ of the slope. The slope of the line on the graph is equal to _____. If the distance is measured in metres and the time is measured in seconds, the units for the slope would be _____. If the distance is measured in _____ and the time is measured in hours, the units for the slope would be _____.
- For a distance-time graph of constant speed, the slope of the line is equal to the _____ speed.
- Calculate the average speed of an object that has the position-time graph below.



- If you want to find the instantaneous speed of an object at any given time on a distance-time graph we draw a _____ at the desired time. Calculating the _____ of this tangent line can help us calculate the instantaneous speed of an object that does not have a _____.

5. For each of the time intervals below, use this graph to describe the motion of the object and calculate the average speed.



a. 0s-4s

b. 4s-7s

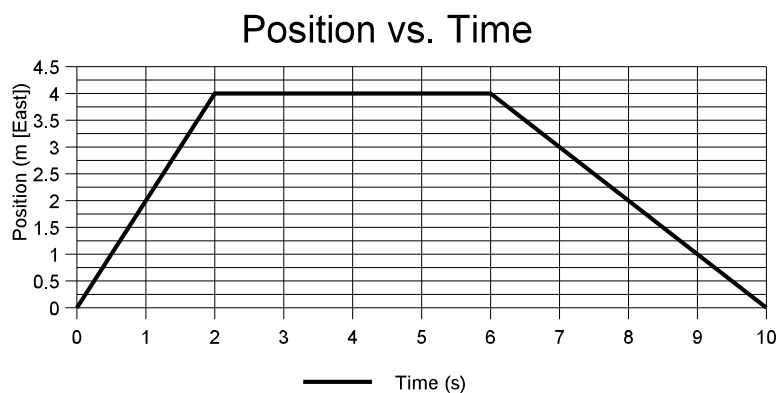
c. 7s-10s

Chapter 12.4 – Displacement and Velocity

1. _____ are quantities that describe magnitude but do not include direction.
2. _____ are quantities that describe magnitude and also include direction.
3. The displacement of an object is defined as the change in _____ of the object.
4. Distance is a _____ quantity and displacement is a _____ quantity.

5. Both _____ and displacement are represented with the letter “d”, so in order to distinguish between the two, we put a small _____ over the “d” that represents displacement.
6. To calculate an object's change in position we subtract the _____ position from the _____ position.
7. It is important that we include direction when determining _____. All positions must be relative to the _____ point. We choose one direction to be the _____ direction, which we denote as a _____ number. The opposite direction is thus given a _____ number.
8. You are walking around downtown. You start 5 m west of the local grocery store and end up 8 m east of the grocery store. Describe how you would calculate your displacement. Be sure to include direction as displacement is a vector quantity.
9. _____ is the rate of change of _____ and it is a _____ quantity because it only has a magnitude.
10. _____ is the rate of change of displacement and it is a _____ quantity because it has a magnitude and a direction.
11. Both distance and speed depend on the _____ taken, while displacement and velocity only depend on the _____ and _____ positions.
12. Calculate the velocities of the following objects:
- a. An object moves 35 metres [E] in 5 seconds
 - b. An object moves 40 km [W] in 2 hours
 - c. An object moves 150 metres [S] in 30 seconds.

13. For each of the time intervals below, use the graph to describe and calculate the velocity of the object. Remember that moving east is positive and moving west is negative.



a. 0s-2s

b. 2s-6s

c. 6s-10s

14. Uniform motion describes objects that travel in _____ displacements in equal _____ intervals. Objects in uniform motion technically do not _____ or _____.

Vocabulary to Know

Write a concise definition of each of these terms found in this chapter.

Average speed -

Average velocity -

Displacement -

Distance -

Instantaneous speed -

Position -

Scalar quantity -

Speed -

Time interval -

Uniform motion -

Vector quantity -

Velocity -